

NORTHERN IDAMO FOREST GENETICS CENTER

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HIGHLIGHTS IN BLISTER RUST CONTROL REGION 6 1963

Successful management of western white pine and sugar pine hinges primarily upon being able to cope with blister rust. Prevention and control of rust is of utmost importance in managing these tree species.

In evaluating the year's progress in blister rust activities, we find that appreciable gains were made in usefulness of antibiotics and in rust-resistant tree breeding work. Surveys and eradication were both active, and planned work was accomplished.

The following sections give highlights of the most important accomplishments.

Survey Program

In 1963, surveys were made on 31,982 acres. Checking surveys and other premaintenance and maintenance surveys were made on 26,986 acres. Surveys to determine suitability of future antibiotics treatment were increased in 1963. A survey of 1,700 acres on the Gifford Pinchot National Forest revealed that about 640 acres are suitable for antibiotics basal stem work. Results from an additional 1,500-acre survey on the Gifford Pinchot National Forest and a 1,325-acre survey on the Siskiyou National Forest have not been completely assessed.

A summary of survey work is given in the following tabulation:

Agency	: Area : Surveys for anti-: Pine appraisal and		
	: checked	: biotic treatment	: disease surveys
- - - - - Acres - - - - -			
Forest Service	12,355	4,996	436
Bureau of Land Management	14,631		

Increased emphasis on disturbance surveys will be needed next year in most management units in southwest Oregon because of the many active salvage timber sales following the 1962 Columbus Day storm.

Eradication Program

As in the past three years, most eradication work in 1963 was restricted to protection of established plantations, cleanup in recent cutovers, and removal of ribes in key areas.

A summary of eradication work is given in the following tabulation:

Agency	Acres		Acres		Total acres worked
	initially		reworked		
	worked				
Forest Service	1,455		3,031		4,486
Bureau of Land Management	443		1,148		1,591

In the Forest Service program, the Rogue River National Forest contracted 35 percent of their eradication work, and the Siskiyou National Forest contracted 7 percent. No contract work was performed on the Umpqua National Forest. Fifty-eight percent of the eradication work on lands administered by the Bureau of Land Management was done by contract.

Approximately 286,000 acres of selected commercial stands in Region 6 are in western white pine or sugar pine management units. Of this acreage, 32 percent is now on maintenance status and another 31 percent has partial protection. Of the remaining acreage (37 percent), some needs initial work in the next few years. Most of this unworked acreage, however, is in mature stands where no initial work is contemplated until harvest cuts are made and pine regeneration has been accomplished.

Antibiotics Program

During 1962 we continued a modest operational program on application of antibiotics to western white pine sapling and pole-sized stands--both aerial and basal stem application. The most recent methods and techniques, as developed by Region 1, were used. In addition to operational treatment, the Snoqualmie, Wenatchee, Mt. Hood, and Willamette National Forests treated some white pine trees in special use areas.

A summary of antibiotics work for the Forest Service and Bureau of Land Management programs is given on page 3. All work is included except that in special use areas and in small test plots.

Agency	1963 work		Accumulative work to date	
	Acres	Trees	Acres	Trees
- - - <u>Ground application</u> - - -				
Forest Service	765	148,636	4,158	486,092
Bureau of Land Management	(None)		395	33,648
- - - <u>Aerial application</u> - - -				
Forest Service	965	137,500	2,720	286,975

Aerial application in 1963 included a 125-acre tract on the Siskiyou National Forest. This spray project was undertaken to test the efficiency of antibiotics for canker control on western white pine in the coast range.

Basal stem work in 1963 included retreatment of 160 acres on the Gifford Pinchot National Forest. The area was originally treated in 1959 with Acti-dione BR, 120 ppm. In the 1963 respray, 150 acres were treated with Acti-dione BR, 150 ppm, and 10 acres were treated with Phytoactin L-440. Some 4,000 white pine trees in 32 campgrounds were sprayed with Acti-dione BR in 1963. Fifteen of the campgrounds were on the Gifford Pinchot National Forest and 17 on the Wenatchee National Forest. The white pine trees in most of these campgrounds were initially treated in the 1959-61 period.

All western white pine and sugar pine stock at Wind River Nursery, available for field outplanting in the 1963-64 planting season, have been antibiotic treated in the nursery beds. Nursery-bed trees were sprayed with Phytoactin L-318, 300 ppm in water. The surfactant Triton X-155 was added at the rate of one-tenth of one percent by volume to aid in proper coverage of the seedlings and adequate absorption of the spray. One gallon of solution was applied to 36 lineal feet of seed bed or about 372 gallons of solution per acre. A calibrated tractor-powered spray unit was used to apply the antibiotic. Application was made during the last of September in early evening and at night to meet temperature and humidity requirements and to avoid drift.

Trees treated in the field application are as follows:

Species	Age class	Number treated
Western white pine	2-0	268,961
Sugar pine	2-0	53,723
Sugar pine	3-0	392,510
		715,194

The stock is given a second treatment after it is lifted and before packaging for shipment or storage. This treatment is a top foliar dip for five seconds in a 200 ppm Phytoactin L-318 water solution.

Labor, material, equipment use, and miscellaneous costs have been \$0.25 per thousand seedlings, \$0.15 for field application and \$0.10 for top-dip treatment.

Our first two antibiotic aerial spray projects (September 1961 and June 1962) in 36-year-old white pine stands using Phytoactin L-318 were evaluated in June 1963. Early results show a pronounced effect on 67 and 45 percent of the sample cankers, respectively.

We have made some progress on evaluation of the effectiveness of antibiotics on sugar pine cankers, but still need another spring canker reading period to reach any conclusions. First results of our basal stem work (1959-61) on sugar pine saplings and poles are highly variable. These results are as follows:

Material	Proportion of sample cankers "apparently controlled"		
	Range	Average	Basis
- Percent -			
Acti-dione BR	6 to 60	33	135 cankers on 91 trees
Phytoactin L-418	10 to 60	33	131 cankers on 93 trees
L-419	9 to 86	44	165 cankers on 106 trees
L-440	--	39	18 cankers on 9 trees
Control	--	16	12 cankers on 10 trees

Application of Phytoactin L-318 (in 10 percent stove oil) as a foliage drench on the infected trees in established sugar pine plantations was continued. In total, 293 acres of plantations were treated in 1963 on the Rogue River National Forest. Treatment required 132 man-days; therefore, about 2.2 acres were treated per man-day. The first meaningful evaluations on this type of treatment will be made in the spring of 1964. The earliest treatments date back to October 1961.

A detailed summary of all our 1963 antibiotic evaluations will be issued in a separate report by June.

Equipment

Small Centrifugal pumps to mix spray solutions for basal stem or foliar drench treatment were purchased for use on several Ranger Districts. As these pumps provide for mechanical agitation, we will now be assured of having the final spray solution thoroughly mixed.

Two Ranger Districts each obtained two-wheeled trailers with 150-gallon fiber-glass tanks. The trailer is pulled by a crew carrier and the tank holds sufficient solution for a day's spraying for a small crew. This equipment provides a compact unit for antibiotics work and avoids the need for use of two or more vehicles by field crews.

Rust Resistance Programs

Tree breeding

Nineteen sixty-three was an excellent year for making controlled crosses between rust-resistant candidate trees. Female flowers were very plentiful in both western white pine and sugar pine trees from the Oregon border to northwestern Washington. Over 1,500 pollination bags were placed on candidate trees on eight National Forests and the Medford District, Bureau of Land Management.

Some 40 new candidate trees were found in 1963, about one-half of which were on the Mt. Hood National Forest.

Progeny testing

The 1963 inoculation run at Wind River Nursery was done by the Region's Branch of Insect and Disease Control, Division of Timber Management. A total of 4,120 pots containing at least one seedling were placed in the inoculation chamber. Of the total pots, 52 contained three-year-old progeny (1960 seed) and were inoculated for the third time; 170 contained two-year-old progeny (1961 seed) and were inoculated for the second time; and 3,881 contained one-year-old progeny and were inoculated for the first time.

Due to a scarcity of cone and pollen flowers in 1962, only 20 lots of control pollinated seed, in sufficient quantity to permit progeny testing, were collected in the fall of 1963. These 20 lots of 1963 seed plus 75 lots of seed from previous years' breeding work were sown in pots in December preparatory to the first inoculation with blister rust in 1964.

Seed orchards

Some 600 western white pine seedlings (from the 1950 pollination program) which have survived three artificial inoculations were out-planted at Dorena Seed Orchard in December. These trees will provide the first opportunities for making F-2 crosses.

Over 200 western white pine scions from field candidate trees were grafted on understock at Dorena Seed Orchard in 1963. Grafting success was good. Grafting will continue until each resistant tree is represented in the arboretum section of the Orchard. Grafting techniques used during the past two years have been satisfactory for western white pine but sugar pine is still giving some difficulty.